

### **III. REMARKS**

Claims 1-20 are pending in this application. Claims 1, 3, 4, and 8 have been amended, and no claims have been cancelled. Applicants do not acquiesce in the correctness of the rejections and reserve the right to present specific arguments regarding any rejected claims not specifically addressed. Further, Applicants reserve the right to pursue the full scope of the subject matter of the original claims in a subsequent patent application that claims priority to the instant application. Reconsideration in view of the following remarks is respectfully requested.

#### **Rejection for failure to comply with 37 C.F.R. § 1.821-1.825**

In the Office Action, the Office asserts that Applicants have failed to comply with the requirements of 37 C.F.R. § 1.821-1.825. Applicants respectfully submit that (1) a one-page paper copy of the Sequence Listing required under 37 C.F.R. § 1.821(c) and (2) a computer readable form (CRF) copy of the Sequence Listing as required by 37 C.F.R. § 1.821(e) have been previously submitted on 20 July 2004. The sequence, identified as SEQ ID NO. 1, also appears on pg. 6 of the specification of the instant application. Applicant respectfully submits that the text of page 7, referenced in the Office Action (pg. 2) of the specification is not a different sequence; rather, it is a demonstration of how SEQ ID NO. 1 could be selectively encrypted according to one embodiment of the claimed invention.

#### **Rejections under 35 U.S.C. § 101**

In the Office Action, claims 1-20 were rejected under 35 U.S.C. § 101 as being allegedly directed to non-statutory subject matter. Specifically, the Office states that “the means limitations of the program products as well as the system and method do not result in a physical

transformation of matter, nor is any concrete, tangible and useful result produced/recited.”

Applicants respectfully traverse the rejection of claims 1, 8, 14, and 17 under 35 U.S.C. § 101, and submit that the invention does recite statutory subject matter.

Initially, Applicants respectfully submit that the relevant section of the United States Code recites that:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.  
35 U.S.C. § 101 (2000).

To this extent, the Code requires that the invention be “new and useful,” but not that the result be “concrete, tangible, and useful,” as asserted by the Office. (*See* Office Action, p. 3.) As noted by the Examiner, the USPTO has provided Interim Guidelines (hereinafter, “the Guidelines”) to assist personnel in the examination of patent applications to determine whether subject matter as claimed is eligible for patent protection. The Guidelines are set forth in 1300 *Off. Gaz. Pat. Off.* 142 (November 22, 2005).

According to the Guidelines, concreteness of the result and tangibility are not dispositive factors on the issue of patentability in and of themselves, but rather are merely factors for use in determining whether the invention is useful. As to whether the claimed invention is useful, the preamble of claim 1, for example, provides a use, to wit, “a computer security system for securing an electronic transmission of a nucleotide chain...” (as amended). This function involves a transformation, e.g., a secure transfer of nucleotide chain data from one system that communicates bioinformatics data to another (or from one node in a computational grid to another).

With respect to claim 8, which recites “A method for securely transmitting a nucleotide chain...”, Applicants note that claim 8 includes features similar in scope to those already addressed above with respect to claim 1. Further, the Office relies on the same arguments and interpretations as discussed above with respect to claim 1. To this extent, Applicants herein incorporate the arguments presented above with respect to claim 1, and respectfully request withdrawal of the rejections of these claims for the above-stated reasons.

With respect to claims 14 and 17, as noted in the Office Action (p. 3), “Whether the program product claims are statutory ... rests on whether the method/program is statutory.” Accordingly, Applicants submit that claims 14 and 17 are directed to statutory subject matter for the reasons stated above relative to claims 1 and 8. Additionally, claims 14 and 17, directed to “a program product stored on a recordable medium for encoding a nucleotide chain...” and “a program product stored on a recordable medium for decoding an encoded nucleotide chain...” respectively, recite features such as “means for identifying coding and non-coding regions in the nucleotide chain,” (claim 14); “means for selectively encrypting only the coding regions identified in the nucleotide chain,” (claim 14); “means for identifying coding and non-coding regions in the encoded nucleotide chain,” (claim 17); “means for selectively decrypting only the coding regions identified in the encoded nucleotide chain,” (claim 17); and “means for reassembling the coding and non-coding regions to generate a decoded nucleotide chain” (claim 17). These features are independent physical acts that manipulate data representing physical objects (e.g., nucleotide base pairs) to achieve a useful result.

To this extent, Applicants respectfully submit that the subject matter in claims 1, 8, 14, and 17 is directed to statutory subject matter. With respect to claims 2-7, 9-13, 15, 16, and 18-20, Applicants herein incorporate the arguments presented above with respect to claims 1, 8, 14,

and 17 from which claims 2-7, 9-13, 15, 16, and 18-20 depend. The dependent claims are believed to be allowable based on the above arguments, as well as for their own additional features. Accordingly, Applicants respectfully request that the rejections to claims 1-20 be withdrawn.

**Rejections under 35 U.S.C. § 112, second paragraph**

In the Office Action, claims 1-13 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Applicants have herein amended claim 1 to provide further clarification by reciting “A security system for securing an electronic version of a nucleotide chain,” rather than “a security system for securing an electronic transmission of a nucleotide chain.” Applicants respectfully submit that the rejections of claims 2-7 based on their dependency on rejected claim 1 are also cured by this amendment.

With further respect to claims 1-7, the Office has requested clarification regarding the language, “a system for,” appearing in claim 1 (Office Action, p. 4). Applicants respectfully submit that such clarification may be found in the specification at pg. 7, last paragraph: “It is understood that the systems, functions, mechanisms, methods, engines and modules described herein can be implemented in hardware, software, or a combination of hardware and software.” Applicants respectfully submit that claim 1 is sufficiently clear in view of this language, and that, accordingly, claims 2-7 are also sufficiently clear.

With respect to claims 3 and 4, Applicants have herein amended the preambles of both claims 3 and 4 to recite “The security system of claim 2” to provide proper antecedent basis.

With respect to claim 8, Applicants have herein amended the preamble of claim 8 to recite “A method for transmitting a nucleotide chain...” thereby providing increased clarity as to the metes and bounds of the claim. (See claim 8.)

Applicants submit that the aforementioned amendments to claims 1, 3, 4, and 8 place claims 1-13 in condition for allowance. Therefore, Applicants respectfully request that the Office withdraw the rejections.

**Rejections under 35 U.S.C. § 102(b)**

In the Office Action, claims 1-4, 6-12, 14, 15, 17, 18, and 20 are rejected under 35 U.S.C. § 102(b) as being anticipated by Rungsarityotin et al. (Wasinee Rungsarityotin et al., *Grid computing and bioinformatics development. A case study on the Oryza sativa (rice) genome*, 74 PURE APPL. CHEM. 891-97 (2002)).

With respect to claim 1, Applicants submit that Rungsarityotin does not disclose “a system for identifying coding and non-coding regions in the nucleotide chain; and a system for selectively encrypting only the coding regions identified in the nucleotide chain.” (*See* Claim 1.) In fact, Rungsarityotin does not appear to teach encryption at all. While Rungsarityotin does disclose a “middleware layer” which will “interface with the grid services, such as security infrastructure and allocation manager, to transform the data from different sites to a standard format,” (*see* Rungsarityotin et al., *supra*, at 892, second from last paragraph), there is no suggestion that encryption of any kind is included in this transformation. This interpretation of the language in Rungsarityotin is further supported by the further disclosure that “the grid security system will support the single signed-on capability so that access authentication should be verified merely the first time.” (Rungsarityotin et al., *supra*, at 892, second from last paragraph.) This indicates that the “security infrastructure” mentioned above pertains to access (as in, password protection) to the database query form, a security feature which can easily be accomplished by a cookie.

With respect to the rejections of independent claims 8 and 14, Applicants note that each claim includes features similar in scope to those already addressed above with respect to claim 1. Further, the Office relies on the same arguments and interpretations of Rungsarityotin as discussed above with respect to claim 1. To this extent, Applicants herein incorporate the arguments presented above with respect to claim 1, and respectfully request withdrawal of the rejections of claims 8 and 14 for the above-stated reasons.

With respect to claim 17, Applicants submit that, as discussed above relative to encryption, Rungsarityotin also does not teach a program product including, *inter alia*, the feature of “selectively decrypting only the coding regions identified in the encoded nucleotide chain; and means for reassembling the coding and non-coding regions to generate a decoded nucleotide chain” (claim 17). As Rungsarityotin did not teach encryption in the first place, he naturally also did not teach the reverse act.

Applicants additionally submit that Rungsarityotin does not teach a program product including, *inter alia*, the feature of a “means for reassembling the coding and non-coding regions to generate a decoded nucleotide chain.” (Claim 17.) In contrast, as the Office notes (*see* Office Action, p. 6), Rungsarityotin teaches the use of “merely ... a line” to denote non-coding regions in the resulting physical map of BAC sequence from chromosome 1 of the rice genome. (*Id.*, citing Rungsarityotin at Fig. 2.) Where non-coding regions are represented by a line, rather than a genomic sequence, it is not possible to “reassemble the coding and non-coding regions to generate a decoded nucleotide chain,” as recited in claim 17.

Accordingly, Applicants respectfully request that the rejections to claims 1, 8, 14, and 17 be withdrawn. With respect to claims 3-4, 6-7, 9-12, 15, 18, and 20, Applicants herein incorporate the arguments presented above with respect to claims 1, 8, 14, and 17 from which

claims 3-4, 6-7, 9-12, 15, 18, and 20 depend. The dependent claims are believed to be allowable based on the above arguments, as well as for their own additional features. Accordingly, Applicants respectfully request that the rejections to these claims be withdrawn as well.

**Rejections under 35 U.S.C. § 103(a)**

In the Office Action, claims 5, 13, 16, and 19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Rungsarityotin et al. (Wasinee Rungsarityotin et al., *Grid computing and bioinformatics development. A case study on the Oryza sativa (rice) genome*, 74 PURE APPL. CHEM. 891-97 (2002)) as applied to claims 1-4, 6-12, 14, 15, 17, 18, and 20 above, and further in view of Jorgenson et al. (US 2004/0221163A1). Applicants respectfully submit that these claims are allowable based on the arguments above with respect to independent claims 1, 8, 14, and 17, and accordingly requests that the rejection be withdrawn.

#### IV. CONCLUSION

Applicants respectfully submit that the Application as presented is in condition for allowance. Should the Examiner believe that anything further is necessary in order to place the application in better condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney at the telephone number listed below.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Michael Hoffman", with a horizontal line extending to the right.

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